

Claims

1. Apparatus for heat ablation of the internal wall of a hollow organ, which apparatus comprises;
 - 5 a catheter having proximal and distal ends, and having at least one internal lumen;
 - a balloon located at the distal end of the catheter and attached to a said lumen,
 - whereby the balloon may be filled with a liquid from the
 - 10 proximal end of the catheter;
 - a supply of a liquid for filling the balloon via the said lumen;
 - a tuned microwave antenna located in the region of the balloon for radiating microwave energy at a predetermined
 - 15 frequency to heat the balloon to a temperature suitable for heat ablation of the hollow organ wall tissue;
 - a waveguide for supplying microwave energy to the microwave antenna; and
 - a temperature probe to measure the temperature of the
 - 20 balloon;
 - wherein the liquid has a dielectric constant of from 41 to 63 and a conductivity of from 1.0 Sm^{-1} to 1.5 Sm^{-1} at said frequency and 50°C .
- 25 2. Apparatus as claimed in claim 1 wherein the liquid has a dielectric constant of from 47 to 57 at said frequency and 50°C .
3. Apparatus as claimed in either claim 1 or claim 2 wherein
 - 30 the liquid has a conductivity of from 1.1 to 1.35 Sm^{-1} at said frequency and 50°C .
4. Apparatus as claimed in any one of the preceding claims having dimensions such that it is suitable for heat ablation
 - 35 of the internal wall of the oesophagus of a human patient.
5. Apparatus as claimed in any one of the preceding claims wherein the balloon has a normal inflation diameter of from 16 to 22 mm.

6. Apparatus as claimed in any one of the preceding claims wherein the temperature probe and the balloon contain no metal.

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7. Apparatus as claimed in claim 6, wherein the temperature probe comprises at least one optical fibre extending from the distal end to the proximal end of the tube.

10 8. Apparatus as claimed in any one of the preceding claims, including means for controlling the power supplied to the microwave antenna in dependence upon the temperature sensed by the temperature probe.

15 9. A process for heat ablation of the internal wall of a hollow organ of a patient, comprising the steps of;
providing a catheter having proximal and distal ends and having at least one internal lumen wherein a balloon is located at the distal end of the catheter and is connected to
20 a said lumen, the balloon surrounding a tuned microwave antenna and a temperature probe and wherein a waveguide for supplying microwave energy at a predetermined frequency to the microwave antenna is connected to the microwave antenna;
inserting the distal end of the catheter into the hollow
25 organ;
positioning the catheter such that the balloon is adjacent to the area of the hollow organ requiring heat ablation;
filling the balloon via the said lumen with a liquid having a dielectric constant of from 47 to 57 and a conductivity of
30 from 1.0 Sm^{-1} to 1.5 Sm^{-1} at said frequency and 50°C ;
supplying microwave energy via the waveguide to the microwave antenna to heat the balloon.

35 10. A process as claimed in claim 9 comprising the further steps of;
providing a means for controlling the power supplied to the microwave antenna in dependence upon the temperature sensed by the temperature probe; and

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11

controlling the power supplied to the microwave antenna to ensure heat ablation of the hollow organ of the patient.

11. A process as claimed in claim 9 or claim 10, wherein
5 the hollow organ is the oesophagus.